How an artificial cell could be created

Scientists at Los Alamos and Argonne National Laboratories have devised an experimental process to create and reproduce artificial cells that could eventually be used to make self-repairing materials, among other things.

Lipid

Molecule that forms the cell membrane.

Lipid nutrient
Can be turned into a lipid.

PNA gene
Contains information in its sequence that modulates metabolism of nutrients.

PNA nutrient
Can be turned into PNA genes.

rient Metabolic sensitizer

ned into Molecule/nutrient that captures and transforms energy from light, which is what the cell uses to digest nutrients.

Protocell

Water

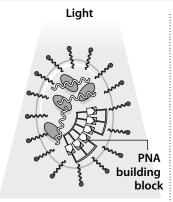
Lipids,

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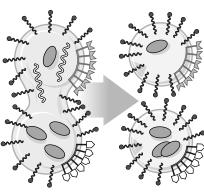
Lipids, sensitizers and PNA genes are added to water. They assemble into a circular structure called a **protocell**.

Nutrients

Nutrients are added. The protocell absorbs the nutrients, which cause it to swell.



Light is applied, triggering the protocell to digest its nutrients and form PNA building blocks. These building blocks form new PNA genes.



As the metabolic reaction creates new lipid molecules, the protocell is forced to divide, generating a copy of itself.

Note: Individual processes have been demonstrated at the laboratories, but not as a whole life cycle. Sources: Steen Rasmussen, Los Alamos National Laboratory; Argonne National Laboratory

Chicago Tribune/Haeyoun Park and Phil Geib